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[An obviously aberrant behaviour under *captive* conditions and not to be interpreted as happening in the wild - Editors.]

4. AN APPROACH-BLOCKING DISPLAY BY A FIVE-STRIPED PALM SQUIRREL *FUNAMBULUS PENNANTI* (WROUGHTON) TO A HOUSE CROW *CORVUS SPLENDENS*

(With a text-figure)

Both the five-striped palm squirrel and the house crow are thriving species (Roberts 1977, 1992) but little has been published about their respective behaviour. Therefore, the following observation probably concerns a frequent as well as unstudied behavioural interaction.

On 22 August 1993 I was in Karachi, Pakistan. Towards sunset, I was observing and (through a 500 mm lens) photographing some five-striped palm squirrels wandering on a building of the Sheraton Hotel. A house crow suddenly alighted at some metres from one of these animals (probably out of sight of it) and hopped towards it. The squirrel soon presented the crow with its hind quarters, raising and bristling its tail. The tail was deliberately waved with an approximately lateral motion. The crow had its approach blocked at the distance shown in Fig. 1. The squirrel repeatedly turned its head from side to side but always presented the crow with a caudal image of itself, also when the bird tried a lateral move. The squirrel held the tail raised, waving it intermittently, and held its position until, half a minute later, the crow flew away. Considering the distance of the interacting animals from me (about 40 m) and the tameness of local house crows, I exclude a disturbing effect of my presence. Nor could I detect any other possible interference accounting for what appeared as an attack failure.

This tail movement was similar to tail flagging by the California ground squirrel *Spermophilus beecheyi* (compare, in particular, with Fig. 1 in Hennessy *et al.* 1981), which is primarily used during interactions with snakes. However, California ground

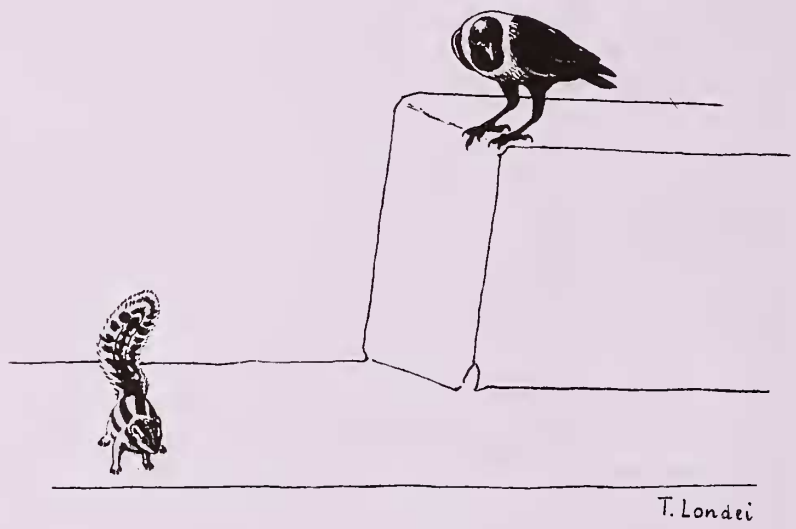

Fig. 1. The observed display.

squirrels usually present the potential predator with a frontal, and not caudal, image while flagging their tails. This difference may be important for both the original and derived functions of the behaviour in question. There are only suggestions that tail flagging may be used to manage the behaviour of the predator (see Hersek and Owings 1993 for an up-to-date review of the various functions of tail flagging). Conversely, the tail movement I observed clearly indicated the crow as a target, not only because of the reactions of the bird, but also because I detected no reaction by the other two or three squirrels that could

see this display. Of course repeated observations will be necessary to exclude any casual concomitance, but students should be encouraged by the fact that the house crow does eat squirrels (Ali and Ripley 1987), hence this display pattern may well have evolved in response to predation.

The observed approach-blocking effect probably depended on a sudden change in the image of the potential prey. This is a defensive mechanism widespread in animals, and some species potentiate the change effect by mimicking a dangerous species. Such may have been the case because the waving tail reminded me of a snake. The colouration of the five-striped palm squirrel is interesting in this respect, as longitudinal stripes give the whole body an elongated appearance, maybe more deceiving when the head and trunk are partly concealed by caudal presentation and the turning head alternately appears on either side. In addition, the tail possesses transversal stripes (often more marked than in the individual in Fig. 1) recalling a ringed snake body.

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5. OCCURRENCE OF BHARAL *PSEUDOIS NAYAUR* (HODGSON) IN THINGBU CIRCLE OF TAWANG DISTRICT OF ARUNACHAL PRADESH

On the basis of information available from local people, on 6th September 1990 I set out from my camp at Mago village with the village head, Gaon Buda, and one other youth of the village, to see bharal (locally called Jungli Bhaid). After trekking up the hill along the right bank of Dugong river for about 2 hours, the local youth observed some movement more than a kilometer away as the crow flies. On looking through binoculars, I observed that the animals were bharal. There were about 10 bharal, most of them relaxing in the Sun and others grazing. They remained in the same location for an hour then suddenly got alarmed and started moving up and eventually disappeared from view.

The highest hill near Mago village is 4770 m and the approximate altitude of Mago village is about 3800 m. The hill we climbed had the tree line near the base which finally gives way to alpine pastures. These pastures are used by domesticated yaks from July to October each year. According to locals bharal come down at night for drinking water in the Dugong river and early in the morning they start going up the hill. In the evening I visited the village and found bharal horns and skin, besides skin of the animals such as goral and Himalayan black bear.

According to Prater (THE BOOK OF INDIAN ANIMALS) though bharal are typical Tibetan animals they are also found in Ladakh, Kumaon Himalayas, Nepal, Sikkim and Bhutan. On that basis this is the first report of its occurrence in western Arunachal Pradesh. How much farther its range goes into Arunachal Pradesh is still to be determined.

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